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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,580	06/21/2001	John Zajac	A-70179/ESW	6621

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EXAMINER
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ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

8

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/886,580

Applicant(s)

ZAJAC ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. The amendment filed March 13, 2003 has withdrawn the restriction requirement.

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.  
  
Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.
- (e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather

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than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (k) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

***Drawings***

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “wafer thickness measuring instruments” must be shown or the feature canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 25, 26, 27, 42, 43, and 44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The wafer

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thickness measuring instruments is not discussed in the specification (page 18, lines 25-27; page 19, lines 13-18) in a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 25, 26, 27, 42, 43, and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 25, 26, 27, 42, 43, and 44 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: How the “wafer thickness measuring instruments” cooperate, structurally, with the components of the invention.

9. Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 27 requires “porpoise” of fine tuning. Correction is required.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-14, 16, 18, 19, 20, 21, 22, 23, 24, 28-41, and 63-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Goodyear et al (USPat. 5,532,190). Goodyear teaches a system (Figure 1; column 3, line 64 – column 18) for processing a substrate/wafer (“4(14’’)).

Goodyear further teaches:

- i. A reaction chamber (10)
- ii. A source (55, 56) of at least one gas for processing the substrate
- iii. A pedestal (11b) for supporting the substrate within the chamber, a counter-electrode (12, 21, 22) parallel to the pedestal
- iv. A segmented (two 12b, one 12a) gas injection element (12, 21, 22) in proximity to the pedestal for injecting the gas into the chamber in a controlled manner such that the flow and mixture of the gas delivered to different regions (12a,12b) of the substrate can be adjusted (23a/24a/26a, and 23b/24b; column 5, lines 13-37) to produce different processing rates therein – column 4, line 42 – column 5, line 13
- v. Means for ionizing the gas to form a plasma (5) - Support for this portion of claim 1 is found in lines 2-21, page 13. Specifically, the specification teaches elements 207, 201, and 203. Goodyear teaches identical means for ionizing the gas including 50, 52, 12, 21, 22, and 11. As such, Goodyear teaches an equivalent apparatus that performs the function of gas ionization. As a result, Goodyear’s prior art elements of 50, 52, 12, 21, 22, and 11 for gas ionization perform the identical function of gas ionization in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the



specification (MPEP 2183). Goodyear further teaches means for ionizing including a capacitively coupled, radio frequency electric discharge as described above ("RF source 50").

- vi. A port (29) for exhausting gas from the chamber
- vii. Means for automatically changing the flows of gas to the injection segments without human intervention - Support for this portion of claim 2 is found in lines 7-8, page 13. Specifically, the specification teaches mass flow controllers 204, 214, and 224. Goodyear teaches mass flow controllers 23a/24a/26a, and 23b/24b (column 5, lines 13-37). As such, Goodyear teaches an equivalent apparatus that performs the function of changing the flows of gas to the injection segments without human intervention. As a result, Goodyear's prior art elements of 23a/24a/26a, and 23b/24b for changing the flows of gas to the injection segments without human intervention perform the identical function of changing the flows of gas to the injection segments without human intervention in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).
- viii. Means for altering the distribution of gaseous injection to provide a process rate (etch rate) which is non-uniform with a desired distribution or where some property of the process is non-uniform with a desired distribution - Support for this portion of claim is found in lines 7-8, page 13. Specifically, the specification teaches mass flow controllers 204, 214, and 224. Goodyear teaches mass flow controllers 23a/24a/26a, and 23b/24b (column 5, lines 13-37). As such, Goodyear teaches an equivalent apparatus that performs the function of altering the distribution of gaseous injection to provide a process rate (etch rate; see Goodyear; column

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3, lines 1-8) which is non-uniform with a desired distribution or where some property of the etching process is non-uniform with a desired distribution (see Goodyear; column 5, lines 13-58). As a result, Goodyear's prior art elements of 23a/24a/26a, and 23b/24b for altering the distribution of gaseous injection to provide a process rate which is non-uniform with a desired distribution or where some property of the etching process is non-uniform with a desired distribution in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).

- ix. A reactive species ("plasma") for etching or deposition (column 1, lines 5-10) is formed by the plasma in the reactor chamber
- x. Regarding claims 10, 22, 23, 32, 33, 55, 56, 66, and 67 and means for adding diluent gas, it is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ." (emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Exparte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). As a result the gas identity of a diluent gas does not structurally distinguish Applicant's invention from the prior art apparatus of Goodyear who teaches gas sources (56, 55).
- xi. Regarding claims 11, 18, 21, 24, 32-41, 45-54, and 62-67 - It has been held that claim language that simply specifies an intended use or field of use for the invention generally will

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not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 15, 17, and 45-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodyear et al (USPat. 5,532,190) in view of Cann et al (USPat. 5,342,660). Goodyear is discussed above. Goodyear does not teach a tilted wafer holding pedestal. Goodyear does not teach the distance between the counter-electrode and the wafer holding pedestal. Cann teaches a plasma deposition chamber (Figure 1) including a tilted wafer holding pedestal (Figure 2; column 4, lines 10-20). Further Cann teaches that the vertical position (281; Figure 2; column 4, lines 10-20) of the wafer holding pedestal may be varied.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Goodyear's wafer holding pedestal with Cann's wafer holding pedestal.

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Motivation to replace Goodyear's wafer holding pedestal with Cann's wafer holding pedestal is to achieve repetitive coverage on the substrate as taught by Cann (column 4, lines 20-25).

14. Claims 25-27, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodyear et al (USPat. 5,532,190) in view of Jeong (USPat. 5,853,484). Goodyear is discussed above. Goodyear does not teach a "wafer thickness measuring instruments". Jeong teaches a wafer thickness measuring instrument ("N-point scanner" 20; Figure 2; column 3, lines 28-34) and flow controller (22) coupled to the measuring instrument to optimize the processing of the wafer (column 3, lines 28-34)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Jeong's wafer thickness measuring instrument and controller to Goodyear's apparatus.

Motivation to add Jeong's wafer thickness measuring instrument and controller to Goodyear's apparatus is to control and optimize process uniformity as taught by Jeong (column 3, lines 20-27).

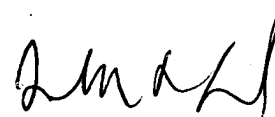
### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPat. 6,059,885; 6,280,573; 6,194,835; 5,792,272; 6,189,485; 6,132,512; 5,500,256; 5,453,124.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry

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of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.

A handwritten signature in black ink, appearing to read "J. Lund", is located to the right of the main text block.

**JEFFRIE R. LUND  
PRIMARY EXAMINER**